Historic Thatch Survey (Wales)

Survey no:	W/06
Building:	Coedweddus Farmhouse
County:	Carmarthenshire
Grid ref:	NGR SN 7440 2776
Adddress:	nr. Mandinam, Llangadog
Date recorded:	04.02.2011
Recorded by:	John Letts, Historic Thatch Consultants (Oxford)
Owner:	Mr. Marcus Lampard Mandinam, Llangadog SA19 9LA tel: 01550 777368
Listing:	Cadw – Grade II*

Locality

Coedweddus Farmhouse is the oldest structure amidst an isolated complex of farm buildings on a hill overlooking the valley of the River Barn, on the N flanks of the Black Mountains c. 4 km E of Llangadog. It is surrounded by rolling hills now covered in rich pasture and grassland, but which once grew prolific crops of cereal. Adjacent fields slope down towards the N onto wet meadow and a wood-lined stream, and hillsides beyond carry extensive tracts of mixed deciduous and conifer forest.

Description

Coedweddus is a single storey, stone walled farmhouse with the remains of a thatched roof surviving beneath an early 20th century covering of corrugated iron. It is c. 18 m in length and 6.5 m in width with a roof area of c. 2,000 ft^2 , and is aligned NE-SW on land that slopes downhill from S to N. It is considered to be a rare example of a traditional, early 18th C, Carmarthenshire-style upland 'longhouse' (RCAMHW 2005). The main entrance is on the S side through a door thought to be the front entrance to a cross passage that once divided the upper (S) inhabited end from a byre at the lower (N) end. The living area was then accessed through a gable door opening into the cross passage.

This byre is thought to have been converted into a 'parlour' in the early 19th century. The oldest part of the building, S of the present entrance, is carried on two ranks of roof purlins that rest on a large stone chimney backing onto a stone partition wall at the lower (N), a coarse A-frame truss at the hipped (S) end, and 2 pairs of scarfed cruck trusses over the 'hall'.

The name Coedweddus first appears in the records of the Glansevin Estate in 1764. The farmhouse is listed as the centre of a farm of over 137 acres in the tithe map of 1839 (DAT 2011: 2.3), and the area attached to it varied between c. 75 and 200 acres over the next 150 years.

Recording strategy

The recording strategy commissioned for this project had four primary goals:

1. recover *in situ* evidence of the methods and materials that were used to thatch the roof in the past;
2. recover archaeological evidence that had collapsed onto the first floor beneath the thatch which would have to be removed during restoration and rethatching works;
3. assess this evidence against what is known about the history of thatching in the Towy Valley (and Wales in general), and
4. use the evidence gathered to shed light on the building's structural evolution.

In response to concerns raised by the local Conservation Officer and The Dyfed Archaeological Trust Ltd. (DAT), it was agreed that goal 2) would be de-emphasised, and that the recording of collapsed thatch would be undertaken in advance of restoration and rethatching works. As with every archaeological project, this investigation would begin with a photographic recording of the roof, followed by limited excavation and sectioning in order to clarify points of structural or technical significance. Samples would be taken of all materials found and archived for future reference.

This work was directed by John Letts with help from Zequito de Oliveira and Duncan Schlee of DAT over a 4 day period in early February, 2011. Access to many parts of the roof structure was limited by the presence of up to a metre of old thatch and debris in some areas, collapsed timber work, unsafe floor boards, loose stone work, dust and cramped working conditions. Halogen floodlights were essential in order to work in the dark confines of this roof safely and record features accurately, and care was taken to ensure that these lights did not come into direct contact with any thatch. Breathing masks were worn at all times to minimise the inhalation of dust and fungal spores.

Digital photographs were taken of features of interest, and dictaphone notes were transcribed to text at the end of each day. Only one detailed plan drawing was considered necessary - of a section of wattle supporting the oldest area of thatch within the central 'hall' (room 3). Samples were labeled and stored temporarily in plastic carrier bags and

black bin liners, and then transferred to strong plastic crates for permanent storage after being assessed in the laboratory.

Results

Simon Ratty (DAT 2011) has prepared a detailed plan of the ground and upper floors of Coedweddus showing the position of the main trusses (except for the A-frame supporting at the (S) hip end). The present survey focused on the roof structure from purlin level upwards, and has used a simple 1-4 room number sequence (running down slope from S to N) to describe the location of the thatch in each area.

Room 1 (N end above lower end 'parlour' - DAT [6])

The roof is carried on 3 ranks of roughly squared oak purlins, c. 12.0 x 12.0 cm, which rest on the stone gable wall at the lower (N) end, the interior stone partition wall at the upper (S) end, and a pegged A-frame truss 22.5 cm (d) x 12.0 (w) which marks the position of a c. modern wooden room partition. The outer face of the stone gable wall was raised to seal the gap between the original gable top and the corrugated iron. The purlins support two rows of mostly straight, vertical, split oak rafters, the upper row linking the middle purlin to the ridge pole and the lower row linking the wall top to the middle purlin. Rafters average 15.3 cm (w) x 4.3 cm (d), lie at c. 40°, and have been pegged to the ridge pole leaving c. 16.4 cm gaps between them. The rear (W) pitch S of the main truss features 8 split and 4 small, c. 7.5 cm dia., pole rafters, matched by 9 split and 2 pole rafters on the front (E) face. All of the rafters have solid heartwood and worm-eaten sapwood.

Thatch: The first floor ceiling supports c. 15 cm of collapsed debris. A base coat of bracken (*Pteridium aquilinum*) c. 15-20 cm deep survives c. 50 cm along both sides of the ridge. The rest of the thatch above the upper purlin is unconsolidated, but may well be intact further down the roof. Numerous pointed spars, usually of thin, 1-3 year round wood or half sections of hazel (*Corylus avellana*) and willow (*Salix* sp.) that once fixed former ridge coats pierce the roof space, and are visible on the surface of the degraded ridge below the corrugated roof. 'Knotted' handfuls of straw are fixed onto (and occa. bedded into) the bracken base coat with twisted U-shaped spars. The first layer of straw above the base coat is composed of short, and very crushed, lengths of 2-row barley (*Hordeum vulgare* sbsp. *distichum*) and also occa. pure bread wheat (*Triticum aestivum* sbsp. *aestivum*) with medium-lax ears and white chaff. This base coat was not tied to the roof structure, and the straw bonds that occur were used to bind sheaves prior to thatching. Straw in other sections is composed of weathered, c. 30-40 cm long, knotted handfuls of bread wheat with small, short and dense ears and reddish and glabrous chaff. Barley and wheat straw is occa. mixed into same knotted handful.

Room 2 (central-N end above stairwell - DAT [5])

The roof structure in this section is contiguous with room 1 (above). The base coat is this area is also composed primarily of a layer of bracken c. 25-30 cm thick, but with a little gorse (*Cytisus scoparius*) throughout and in some areas (eg. the W face above the upper purlin) primarily gorse. The weathering straw thatch over the base coat in the upper part of the roof has been greatly disturbed by rodents, but the first basal layer of straw has clearly been 'stuffed and pegged' into the bracken and is overlyain with additional 'stuffed' layers of wheat straw. A rolled up sheet of newspaper that was tucked into a hole in base coat behind the upper purlin at the top of the stairs is dated May 7th, 1898. The c. 30 cm deep base coat of bracken on the top of the partition wall over the stairwell is overlain by c. 10 cm of knotted wheat straw pegged onto the, a second layer of stuffed barley straw, and at least two more layers of stuffed wheat straw. This thatch once formed the top of an external gable wall, but was trapped beneath the new roof that was inserted over the stairwell and lower room when this (N) end was rebuilt in the c. early 19th C. Drip stones fixed to the E and W sides of the brick chimney at the top of the partition wall (now c. 90 cm above rafters) helped prevent water ingress between chimney and the abutting thatch.

A small excavation along the interior wall top on the E and W faces confirmed that the rafter feet in this area were bedded onto a c. 4-6 cm thick layer of well grazed, grassy turf, which was covered inside with coarse white lime plaster to the edge of the floor boards. On the outside of the wall top, this grey coloured turf was covered with yellowish clom (cob) which also secured the base coat of bracken to the wall top.

Room 3 (Hall, DAT rm [7])

Much of the thatch in this central section of the farmhouse has collapsed onto the first floor. A 'trench' was excavated through the c. 30-65 cm of accumulated debris across the width of this room, c. 80 S of the central cruck truss, in order to understand how the thatch was secured along the wall top. On both faces, the rafter feet rest directly on the solid stone wall top and are overlain by c. 20 cm of bracken. As in most of the roof, a basal layer of knotted straw (mostly wheat, but occa. barley) has been pegged into the bracken and was in turn 'stuffed' at various times with wheat straw. A large wooden beam revealed by Z. Oliveira c. 10 cm to the S of the floor joist is probably an original sill beam marking the former position of a door into the upper end of the farmhouse. This sill now forms the top of a recess in the interior front wall of the 'hall', and its position matches a clear join in the exterior stonework at this position.

The two ranks of purlins on the rear face are roughly squared, the upper one 14.0 cm x 11 cm and the lower purlin 12.0 cm x 16.0 cm. Both rest on the chimney and stone wall at their lower (N) end, and both pairs of cruck trusses at their S ends. The upper, roundwood purlin on the front (E) face is probably a later insertion and now supports the corrugated iron roof (the rest of the corrugated iron is supported on trusses applied over the thatch). At its N end this pole-purlin rests on insecure stonework adjacent to a small door through the partition wall E of the chimney, and at its S end by the central cruck truss. Two

shorter purlins support vertical rafters between the first and second cruck trusses, one of which then continues through to hip end. The ridge piece also rests on the chimney breast and runs over the central truss to the second (S) cruck truss. The lower tie beam collars of both cruck trusses have been removed at waist height to allow free movement on the upper floor, presumably when the chimney and first floor were inserted.

Thatch: two phases of base coat thatching have survived in this section:

1) An original, smoke-blackened, base layer of fine, leafy, bracken mixed with short lengths of crushed barley straw (cf. threshing waste), survives in a discreet c. 1.5 m x 1.0 m zone on both sides of the ridge, but primarily on the rear (W) face in the vicinity of the central cruck truss, above a loosely woven brushwood base/wattle underthatch. The upright 'sails' of this wattle are c. 5-8 cm dia. and rest on the wall plate, purlins and ridge pole; horizontal, c. 1.5-4 cm dia. branches of 'durmast' (sessile) oak (*Quercus petraea*), have been woven around the sails and occasionally loop around the purlins. The heavy blackening of the wattle and base coat in this section could not have been created by candles, oil lamps or a leaking chimney. This wattle is more degraded on the front (E) pitch of the roof.

2) The original base coat has been replaced throughout the rest of the S end of the farmhouse with pure bracken that is *not* smoke blackened – including sections immediately adjacent to, and *beneath*, the blackened wattle.

It is likely that most of this replacement occurred when the chimney and first floor were inserted. Much of the original wattle lower down the roof was either removed or gradually collapsed. Eventually – probably both before and after the application of the corrugated iron - efforts were made to bolster and replace the collapsed wattle with c. 7.0 cm dia. pole rafters inserted vertically between the purlins at c. 25-30 cm spacings. This repair was not effective, and much of the bracken on the front (W) pitch has collapsed, along with overlying layers of 'stuffed' weathering straw (the S face of a thatched roof almost always degrades more quickly than its N face). Much of this area will need to be cleared and rebuilt prior to rethatching works, and this part of the roof therefore provides an ideal opportunity for future archaeological investigation.

This room once had a whitewashed ceiling as residual sections of hessian cloth have survived nailed along the length of the upper purlin.

<u>Room 4 (above the dairy - DAT [8])</u>

The stone gable wall at the S end is c. 65 cm thick and rises c. 90 cm above first floor level. The ridge pole, c. 11 cm dia. at its S end, rests on a rough sawn yoke pegged at each end to upright, c. 10 cm (w) x 15 cm (d), trusses which are in turn pegged at their feet to the heavy joist/tie beam supporting the first floor just inside the S gable wall. These trusses carry two ranks of purlins on each pitch, all of which are supported at their N end by the 2nd (S) cruck truss. Three short, and near-vertical, c. 7-10 cm dia. pole

rafters on the W gable end indicate that this end was once fully hipped. The rafters are nailed at their apices to the end trusses at c. 25 cm intervals, and their feet now rest on the stone wall top (but were probably once bedded into clom). The small stone window that now sits precariously at the centre of the wall top was built while this hip was in place. This area contains a great deal of abandoned clothing, hessian sacking, bottles and assorted rubbish, including the remains of a newspaper dated to October 30th 1905.

Another section of newspaper dated February 11, 1907, was found stuffed into a gap in the base coat on the lower front pitch (above the pine tongue and groove bedroom). Because this area can only be accessed from within the roof space, this bedroom must have been constructed between 1907 and 1924 (the later date is scribbled on its gable wall) while the roof was still thatched.

The wattle underthatch above room 4 roof has largely disintegrated, but survives in sections near the ridge at the hip end. As in room 3, short, c. 7 cm dia., vertical pole rafters have been inserted between the purlins in an attempt to repair and support the thatch. An accumulation of base coat and weathering thatch, c. 30-40 cm, thick survives below the upper purlin on both pitches, but the surface of the thatch in this area is very disturbed and the underlying rafters have probably degraded. The bracken base coat in most of this E end is very similar to the base coat above the main 'hall', but on the front (E) pitch also contains c. 5% common heather (*Calluna vulgaris*) and c. 15% gorse. The first layer of straw above the bracken is composed of very fine wheat straw, heavily crushed, that was layered into the surface of the bracken and fixed with small dia. U-shaped spars. Many such spars survive along the degraded ridge, which was built up from alternating layers of wheat straw and bracken, each 4-8 cm thick, wrapped over apex.

Discussion

The present investigation, and a parallel survey by the Dyfed Archaeological Trust, did not reveal any conclusive evidence that this building was once a longhouse. No trace of a cross passage survives in the rear (W) wall, and if the lower end was once a byre it was entirely rebuilt in the early 19th century.

The discovery of the sill beam in the front wall adjacent to the central cruck truss confirms that the upper hall was once accessed by a doorway at its S end. Slots in the floor joists on both sides of this entrance suggest that it opened into a passage which controlled access to the hall (to the right) and an upper room (to the left). If the original structure was indeed a two roomed cottage, it would be logical for the original fireplace and smoke hood to have been placed against the N stone gable wall in the position now occupied by the stone chimney. The end trusses supporting the ridge pole and purlins at the hip end are probably original, and as they sit on the large floor joist that spans the 'diary' adjacent to the stone wall at the S end, it is likely that this end was floored to the passage. There is no direct evidence that the 'irregularity' in the stone work on the inner face of the ground floor gable wall (of the dairy) at the upper (S) end was ever a fireplace, and this is unlikely if this end was floored. What is now the main entrance into

the hall (through the N gable end) would have provided a secondary entrance into the hall and possibly access to a lower room/byre, which was rebuilt when the chimney was inserted in the c. mid-late 18th century. The smoke-blackened wattle and base coat in the roof above the hall is therefore original, whereas the rest of the thatch S of the stone partition wall was probably replaced when the chimney was inserted.

There any direct evidence for an earlier clom phase at Coedweddus, although it is possible that the cruck trusses that now protrude beyond the rear (W) wall were once imbedded in clom that was replaced by the present stone wall at an early date. Some trace of this may well survive in the soil adjacent to the rear wall.

The evidence points to a logical developmental sequence for the surviving thatch:

1) The earliest phase (late 17th/early 18th C) included a smoke hood that probably occupied the position of the current chimney; leakage led to the blackening of the bracken and barley base coat and wattle underthatch that survives above the hall.
2) Most of the original thatch was stripped when the chimney was inserted in the c. mid-late 18th century, except for a small area near the central cruck truss.
3) The base coat throughout the rest of the upper (S) end was replaced with bracken (mixed in some areas with a little heather and gorse), spar thatched with a basal layer of barley straw and 'stuff thatched' with wheat straw.
4) A new roof (with a bracken base coat) was constructed when the byre was rebuilt in the c. early 19th century.
5) The roof was 'stuff thatched' with relatively thin coats of wheat straw every c. 15 years until it was covered with corrugated iron in the c. 1930-40s.

Coedweddus farmhouse provides a classic example of the 'arable upland' style of thatching that was used in the upper Towy Valley, and throughout Carmarthenshire, in the 18th and 19th centuries (and probably much earlier). The bracken, gorse and heather used in the base coat was cut from the hinterland of the site, and perhaps from land that was then enclosed and improved for pasture or arable. The fineness of the fronds in the original smoke-blackened base coat above the central cruck suggests the bracken may have been cut early in the season, which would have made it easier to apply. This is also the best time to cut bracken in order to check its growth. Mixing the bracken with barley straw perhaps suggests a shortage of bracken for this purpose, but the barley also ensured that the base coat packed well and held a spar securely. Many of the spars used to fix the first layer of straw to the bracken would also have pierced through the open wattle underthatch, and thereby helped ensure that the base coat 'congealed' over time and did not slip down towards the eave.

Gorse thrives in upland districts, provides an excellent base coat for 'stuff' thatching and keeps rodents at bay, but is a minor component in this roof compared to bracken. Heather is much less common, both in this roof and in the vicinity of the site in the present day, and the heather in this roof was probably collected adventitiously when bracken was cut from local lowland heath or rough pasture. The base coat does not contain pasture rushes, which suggests that the fields around the site were well managed and a better alternative (bracken) was more easily obtained in the quantity required.

The presence of barley within the base coat and basal layer of thatch obviously implies that this grain was already being grown on or near the farm when this farmhouse was built. This straw is derived from a spring-sown variety of 2-row hulled barley with long, narrow ears that would have been suitable for making bread, pottage and ale. The sample examined contained mostly ear and upper stem sections, c. 15-20 cm in length, that are heavily crushed and can be reliably described as threshing waste. The mix of coarse bracken fronds and short, flexible segments of barley provided an ideal base coat that would settle into the uneven surface above the wattle/brushwood underthatch, providing a stable base for overlying layers of 'sparred' or 'stuffed' thatch. Similarly, the wheat used in basal layers (sparred onto the bracken) was heavily crushed, most probably with a flail as many specimens still carry traces of distinct blows. Overlying layers of weathering thatch were less crushed, which would have provided a 'lighter' straw that released moisture more effectively when 'stuffed' onto a roof with a shallow pitch.

The evidence indicates that Coedweddus farmhouse has always been thatched using the 'stuff' thatching method that was once used throughout Wales (beyond the Vale of Glamorgan), and in some parts of Ireland, Scotland and N. England into the early 20th century (Moir and Letts 1999). A handful of threshed straw was twisted and then folded at its apex, hooked over the tip of a forked stick, and 'stuffed' into the weathered thatch in horizontal courses. The new thatch was held in place by friction, and 'stuffing' was the method of choice for poor farmers with limited straw available and no access to wood for making 'spars'. Historical records suggest that stuff thatch was expected to last for 20-25 years, whereas Glamorgan-style 'reed straw' thatch had to be replaced after only 15-18 years (Davies 1815:140-3).

Glamorgan-style 'reed straw' was applied in overlapping horizontal courses fixed with 'spars' and horizontal wooden 'sways'. A sparred roof must be replaced before its fixings are exposed, which means that up to c. half of the straw applied plays no role in the weathering process before the roof must be rethatched. In stuff thatching, however, a new coat of thatch can degrade almost entirely before the next rethatching, which ensures maximum longevity without the need for wooden fixings of any kind. When properly applied, individual stems within a layer of stuff thatch lie at a steeper pitch than Glamorgan 'reed straw' or English-style 'combed wheat reed' and 'long straw' thatch, which allows the surface to shed water more effectively. Stuff thatching has recently been re-introduced to South Wales on an experimental basis with the support of The National Trust and CADW.

The large number of bent and twisted 'spars' that survive on the degraded surface of the thatch beneath the corrugated roof at Coedweddus confirms that its ridges, eaves and gables were secured with surface 'liggers' – a necessity on 'stuff thatched' roofs where the straw is flexible. It is assumed that straw bonds will not last as long as wooden liggers, but they probably performed as well as the thin wooden liggers that were available to most house owners in the past. The archaeological and photographic evidence suggests that most roofs in the Towy Valley were fitted with simple 'wrap-over' ridges that were finished flush with the main coat and secured with twisted straw bonds

in preference to wooden liggers. Although the material forming a ridge might be intact, the ridge is usually replaced once its surface bonds have degraded. The ridge of a 'spar coated' English-style roof must be kept in good condition as it protects the fixings of the last course applied at the apex. On a stuff thatched roof, however, there are no fixings to be covered and the ridge simply provides additional protection to an area that is inevitably shallow and subject to wind and bird damage.

The 'spars' recovered from this roof were almost all of flexible round wood hazel or willow, of 1-3 year's growth, bent or tightly twisted into U-shaped 'staples' – in contrast to stiff, English-style spars, traditionally split from 5-7 year old hazel rods, that require considerable skill and strength to twist properly to prevent snapping. Modern English and Welsh thatchers are wedded to the notion that spars must be made from split hazel cut from well-maintained coppice. The archaeological *and technical* evidence, however, indicates that durable spars can also be made from 2-3 year round wood willow and hazel as long as they are not allowed to dry out before use.

All of the wheat recovered was easily identified as common bread wheat (*Triticum aestivum*), and samples contain both 'red' and 'white' chaffed specimens; the former is most probably a local example of the '*gwenith y wlad*" (country wheat) that was grown in upland districts into the early 20th century, and the latter is perhaps a local version of the 'white' wheat that was grown in more favourable districts and produced a higher quality white flour. Early layers contained both awned and 'bald' forms, and ears were morphologically diverse as regards a range of basic characters, as expected of genetically diverse 'land race' crop.

If thatched to a modern standard (c. 3 10' x 10' thatcher's squares/ton), this roof would require c. 6-7 tons of straw grown on c. 5-6 acres of good quality wheat land. Early 19th century varieties produced at least 25% less straw than modern thatching varieties, however, and because straw was a limited resource (and labour was cheap) considerably less thatch was applied at every rethatching. In 1825 a full rethatching of Coedweddus would have required c. 4-5 tons of hand-threshed straw grown from a c. 5 acre crop. In practice, this roof would have been rethatched in sections of c. 10-20% every 1-2 years, which reduced the annual straw requirement to c. 0.5-1 ton a year (assuming new thatch performed adequately for c. 10 years). In an average year, the grain 'by-product' of a 1 acre plot of pure wheat would have provided enough flour to make three large (800 g) loaves of wholemeal bread per day.

The widespread adoption of corrugated iron put an end to traditional roof thatching in the Towy Valley, and throughout Wales, in the 1920-40s. Corrugated roofing was relatively cheap and could be applied by unskilled workers, whereas thatchers and thatching materials were becoming increasingly scarce and could no longer be relied upon to keep out the rain. Thatch was gradually eclipsed by roofing materials that were better suited to modern economic and cultural conditions. Some of the new thatching methods and materials that have been introduced to Wales over the last 30 years provide a cost-effective alternative to corrugated iron, slate and tiles, but there is now considerable rationale for resurrecting historical methods and materials that are more appropriate to the

Welsh climate - informed by a scientific understanding of the factors that governed their former use and their potential as modern 'eco-roofing' materials.

Acknowledgements

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Appendix

<u>Sample record:</u>

W/06 -1: Spars removed from the excavation trench in the hall near the central truss were primarily of 1-3 year old round wood or half-split hazel and willow, weathered to 15-25 cm length, c. 1.5 cm thick and with still sharp, 2-faceted points.

W/06-2a: room 1

W/06-2b: room 2

W/06-2c: room 3

W/06-2d: room 4